

SHAPED-REFLECTOR MULTIBEAM ANTENNAS

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ABSTRACT

A method, an apparatus, and a computer program product for electromagnetically designing a shaped-reflector multibeam antenna (100) are disclosed. An initial configuration of the multibeam antenna (100) for given beam directions is provided of reflectors (110,120) shaped with an initial reflector shaping process (612) and feeds of an
10 initial specification (614). The initial reflector shaping process (612) is an iterative optimization process for increasing the focusing of optical rays incident on the multibeam antenna from the given beam directions (100). A second iterative optimizing process consisting of optimizing (620) radiation patterns of feeds (140A-140D) and optimizing (622) surface shapes and sizes of reflectors (110,120) is used to reduce beam
15 spillover, improve beam shapes and obtain beams with gain radiation patterns within required upper and lower bounds.